EDITED 08/08/94.CON.SEQ Map (1 > 1643)Site and Sequence
Enzymes :   All 417 enzymes (No Filter)
Settings :   Circular, Certain Sites Only, Standard Genetic Code

```
GGCACGAGCGGCTGCCTGGCTGACTTACAGCAGTCAGACTCTGACAGGTTCATGGCTATGATGGAGGTCC
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  70
CCGTGCTCGCCGACGGACCGACTGAATGTCGTCAGTCTGAGACTGTCCAAGTACCGATACTACCTCCAGG

   G  T  S  G  C  L  A  D  L  Q  Q  S  D  S  D  R  F [M] A  M  M  E  V
     A  R  A  A  A  W  L  T  Y  S  S  Q  T  L  T  G  S  W  L  .  W  R  S
   R  H  E  R  L  P  G  .  L  T  A  V  R  L  .  Q  V  H  G  Y  D  G  G  P
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   P  V  L  P  Q  R  A  S  K  C  C  D  S  E  S  L  N  M  A  I  I  S  T  W
   A  R  A  A  A  A  Q  S  V  .  L  L  .  V  R  V  P  E  H  S  H  H  L  D
   C  S  R  S  G  P  Q  S  V  A  T  L  S  Q  C  T  .  P  .  S  P  P  G

AGGGGGGACCCAGCCTGGGACAGACCTGCGTGCTGATCGTGATCTTCACAGTGCTCCTGCAGTCTCTCTG
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  140
TCCCCCCTGGGTCGGACCCTGTCTGGACGCACGACTAGCACTAGAAGTGTCACGAGGACGTCAGAGAGAC

   Q  G  G  P  S  L  G  Q  T  C  V  L  I  V  I  F  T  V  L  L  Q  S  L  C
     R  G  D  P  A  W  D  R  P  A  C  .  S  .  S  S  Q  C  S  C  S  L  S
   G  G  T  Q  P  G  T  D  L  R  A  D  R  D  L  H  S  A  P  A  V  S  L
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   P  P  G  L  R  P  C  V  Q  T  S  I  T  I  K  V  T  S  R  C  D  R  Q
   L  P  S  G  A  Q  S  L  G  A  H  Q  D  H  D  E  C  H  E  Q  L  R  E  T
   P  P  V  W  G  P  V  S  R  R  A  S  R  S  R  .  L  A  G  A  T  E  R

TGTGGCTGTAACTTACGTGTACTTTACCAACGAGCTGAAGCAGATGCAGGACAAGTACTCCAAAAGTGGC
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  210
ACACCGACATTGAATGCACATGAAATGGTTGCTCGACTTCGTCTACGTCCTGTTCATGAGGTTTTCACCG

   V  A  V  T  Y  V  V  Y  F  T  N  E  L  K  Q (M) Q  D  K  Y  S  K  S  G
   V  W  L  .  L  T  C  T  L  P  T  S  .  S  R  C  R  T  S  T  P  K  V  A
   C  G  C  N  L  R  V  L  Y  Q  R  A  E  A  D  A  G  Q  V  L  Q  K  W
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   T  A  T  V  .  T  Y  K  V  L  S  S  F  C  I  C  S  L  Y  E  L  L  P
   H  S  Y  S  V  H  V  K  G  V  L  Q  L  L  H  L  V  L  V  G  F  T  A
   H  P  Q  L  K  R  T  S  .  W  R  A  S  A  S  A  P  C  T  S  W  F  H  C

ATTGCTTGTTTCTTAAAAGAAGATGACAGTTATTGGGACCCCAATGACGAAGAGAGTATGAACAGCCCCT
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  280
TAACGAACAAAGAATTTTCTTCTACTGTCAATAACCCTGGGGTTACTGCTTCTCTCATACTTGTCGGGGA

   I  A  C  F  L  K  E  D  D  S  Y  W  D  P  N  D  E  E  S  M  N  S  P
   L  L  V  S  .  K  K  M  T  V  I  G  T  P  M  T  K  R  V  .  T  A  P
   H  C  L  F  L  K  R  R  .  Q  L  L  G  P  Q  .  R  R  E  Y  E  Q  P  L
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   M  A  Q  K  K  F  S  S  S  L  .  Q  S  G  L  S  S  S  L  I  F  L  G  Q
   N  S  T  E  .  F  F  I  V  T  I  P  V  G  I  V  F  L  T  H  V  A  G
     Q  K  N  R  L  L  L  H  C  N  N  P  G  W  H  R  L  S  Y  S  C  G  R
```

Steven M. Ruben   Ruben EXHIBIT #152
Appl. No. 10/662,429

```
GCTGGCAAGTCAAGTGGCAACTCCGTCAGCTCGTTAGAAAGATGATTTTGAGAACCTCTGAGGAAACCAT
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+ 350
CGACCGTTCAGTTCACCGTTGAGGCAGTCGAGCAATCTTTCTACTAAAACTCTTGGAGACTCCTTTGGTA
```

```
 C  W  Q  V  K  W  Q  L  R  Q  L  V  R  K  M  I  L  R  T  S  E  E  T  I
   A  G  K  S  S  G  N  S  V  S  S  L  E  R  .  F  .  E  P  L  R  K  P
     L  A  S  Q  V  A  T  P  S  A  R  .  K  D  D  F  E  N  L  .  G  N  H
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+
       Q  C  T  L  H  C  S  R  .  S  T  L  F  I  I  K  L  V  E  S  S  V  M
     A  P  L  D  L  P  L  E  T  L  E  N  S  L  H  N  Q  S  G  R  L  F  G  N
       S  A  L  .  T  A  V  G  D  A  R  .  F  S  S  K  S  F  R  Q  P  F  W
```

```
TTCTACAGTTCAAGAAAAGCAACAAAATATTTCTCCCCTAGTGAGAGAAAGAGGTCCTCAGAGAGTAGCA
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+ 420
AAGATGTCAAGTTCTTTTCGTTGTTTTATAAAGAGGGGATCACTCTCTTTCTCCAGGAGTCTCTCATCGT
```

```
   S  T  V  Q  E  K  Q  Q  N  I  S  P  L  V  R  E  R  G  P  Q  R  V  A
 F  L  Q  F  K  K  S  N  K  I  F  L  P  .  .  E  K  E  V  L  R  E  .  Q
 F  Y  S  S  R  K  A  T  K  Y  F  S  P  S  E  R  K  R  S  S  E  S  S
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+
   E  V  T  .  S  F  C  C  F  I  E  G  R  T  L  S  L  P  G  .  L  T  A
     R  C  N  L  F  L  L  L  I  N  R  G  .  H  S  F  S  T  R  L  S  Y  C
   K  .  L  E  L  F  A  V  F  Y  K  E  G  L  S  L  F  L  D  E  S  L  L  L
```

```
GCTCACATAACTGGGACCAGAGGAAGAAGCAACACATTGTCTTCTCCAAACTCCAAGAATGAAAAGGCTC
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+ 490
CGAGTGTATTGACCCTGGTCTCCTTCTTCGTTGTGTAACAGAAGAGGTTTGAGGTTCTTACTTTTCCGAG
```

```
   A  H  I  T  G  T  R  G  R  S  N  T  L  S  S  P  N  S  K  N  E  K  A
   L  T  .  L  G  P  E  E  E  A  T  H  C  L  L  Q  T  P  R  M  K  R  L
 S  S  H  N  W  D  Q  R  K  K  Q  H  I  V  F  S  K  L  Q  E  .  K  G  S
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+
 A  .  M  V  P  V  L  P  L  L  L  V  N  D  E  G  F  E  L  F  S  F  A  R
     S  V  Y  S  P  G  S  S  S  A  V  C  Q  R  R  W  V  G  L  I  F  L  S
       E  C  L  Q  S  W  L  F  F  C  C  M  T  K  E  L  S  W  S  H  F  P  E
```

```
TGGGCCGCAAAATAAACTCCTGGGAATCATCAAGGAGTGGGCATTCATTCCTGAGCAACTTGCACTTGAG
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+ 560
ACCCGGCGTTTTATTTGAGGACCCTTAGTAGTTCCTCACCCGTAAGTAAGGACTCGTTGAACGTGAACTC
```

```
 L  G  R  K  I  N  S  W  E  S  S  R  S  G  H  S  F  L  S  N  L  H  L  R
 W  A  A  K  .  T  P  G  N  H  Q  G  V  G  I  H  S  .  A  T  C  T  .
   G  P  Q  N  K  L  L  G  I  I  K  E  W  A  F  I  P  E  Q  L  A  L  E
+···+···+···|···+···+···|···+···+···|···+···+···|···+···+···|···+···+···+
   P  R  L  I  F  E  Q  S  D  D  L  L  P  C  E  N  R  L  L  K  C  K  L
 Q  A  A  F  Y  V  G  P  F  .  .  P  T  P  M  .  E  Q  A  V  Q  V  Q  P
   P  G  C  F  L  S  R  P  I  M  L  S  H  A  N  M  G  S  C  S  A  S  S
```

```
GAATGGTGAACTGGTCATCCATGAAAAAGGGTTTTACTACATCTATTCCCAAACATACTTTCGATTTCAG
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 630
CTTACCACTTGACCAGTAGGTACTTTTTCCCAAAATGATGTAGATAAGGGTTTGTATGAAAGCTAAAGTC

  N  G  E  L  V  I  H  E  K  G  F  Y  Y  I  Y  S  Q  T  Y  F  R  F  Q
  G  M  V  N  W  S  S  M  K  K  G  F  T  T  S  I  P  K  H  T  F  D  F  R
  E  W  .  T  G  H  P  .  K  R  V  L  L  H  L  F  P  N  I  L  S  I  S
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
  F  P  S  S  T  M  W  S  F  P  N  .  .  M  .  E  W  V  Y  K  R  N  .
   I  T  F  Q  D  D  M  F  F  P  K  V  V  D  I  G  L  C  V  K  S  K  L
  S  H  H  V  P  .  G  H  F  L  T  K  S  C  R  N  G  F  M  S  E  I  E  P


GAGGAAATAAAAGAAAACACAAAGAACGACAAACAAATGGTCCAATATATTTACAAATACACAAGTTATC
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 700
CTCCTTTATTTTCTTTTGTGTTTCTTGCTGTTTGTTTACCAGGTTATATAAATGTTTATGTGTTCAATAG

  E  E  I  K  E  N  T  K  N  D  K  Q  M  V  Q  Y  I  Y  K  Y  T  S  Y
  R  K  .  K  K  T  Q  R  T  T  N  K  W  S  N  I  F  T  N  T  Q  V  I
  G  G  N  K  R  K  H  K  E  R  Q  T  N  G  P  I  Y  L  Q  I  H  K  L  S
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
  S  S  I  F  S  F  V  F  F  S  L  C  I  T  W  Y  I  .  L  Y  V  L  .  G
  L  F  Y  F  F  V  C  L  V  V  F  L  H  D  L  I  N  V  F  V  C  T  I
   P  F  L  L  F  C  L  S  R  C  V  F  P  G  I  Y  K  C  I  C  L  N  D


CTGACCCTATATTGTTGATGAAAAGTGCTAGAAATAGTTGTTGGTCTAAAGATGCAGAATATGGACTCTA
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 770
GACTGGGATATAACAACTACTTTTCACGATCTTTATCAACAACCAGATTTCTACGTCTTATACCTGAGAT

  P  D  P  I  L  L  M  K  S  A  R  N  S  C  W  S  K  D  A  E  Y  G  L  Y
  L  T  L  Y  C  .  .  K  V  L  E  I  V  V  G  L  K  M  Q  N  M  D  S
   .  P  Y  I  V  D  E  K  C  .  K  .  L  L  V  .  R  C  R  I  W  T  L
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   S  G  I  N  N  I  F  L  A  L  F  L  Q  Q  D  L  S  A  S  Y  P  S  .
  R  V  R  Y  Q  Q  H  F  T  S  S  I  T  T  P  R  F  I  C  F  I  S  E  I
  Q  G  .  I  T  S  S  F  H  .  F  Y  N  N  T  .  L  H  L  I  H  V  R


TTCCATCTATCAAGGGGGAATATTTGAGCTTAAGGAAAATGACAGAATTTTTGTTTCTGTAACAAATGAG
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 840
AAGGTAGATAGTTCCCCCTTATAAACTCGAATTCCTTTTACTGTCTTAAAAACAAAGACATTGTTTACTC

  S  I  Y  Q  G  G  I  F  E  L  K  E  N  D  R  I  F  V  S  V  T  N  E
  T  P  S  I  K  G  E  Y  L  S  L  R  K  M  T  E  F  L  F  L  .  Q  M  S
  F  H  L  S  R  G  N  I  .  A  .  G  K  .  Q  N  F  C  F  C  N  K  .
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
  E  M  .  .  P  P  I  N  S  S  L  S  F  S  L  I  K  T  E  T  V  F  S
   G  D  I  L  P  S  Y  K  L  K  L  F  I  V  S  N  K  N  R  Y  C  I  L
  N  W  R  D  L  P  F  I  Q  A  .  P  F  H  C  F  K  Q  K  Q  L  L  H  A
```

```
CACTTGATAGACATGGACCATGAAGCCAGTTTTTTCGGGGCCTTTTTAGTTGGCTAACTGACCTGGAAAG
+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+ 910
GTGAACTATCTGTACCTGGTACTTCGGTCAAAAAAGCCCCGGAAAAATCAACCGATTGACTGGACCTTTC

 H   L   I   D   M   D   H   E   A   S   F   F   G   A   F   L   V   G   .   L   T   W   K
   T   .   T   W   T   M   K   P   V   F   S   G   P   F   .   L   A   N   .   P   G   K
 A   L   D   R   H   G   P   .   S   Q   F   F   R   G   L   F   S   W   L   T   D   L   E   R

 C   K   I   S   M   S   W   S   A   L   K   K   P   A   K   K   T   P   .   S   V   Q   F   S
   V   Q   Y   V   H   V   M   F   G   T   K   E   P   G   K   .   N   A   L   Q   G   P   F
     S   S   L   C   P   G   H   L   W   N   K   R   P   R   K   L   Q   S   V   S   R   S   L

AAAAAGCAATAACCTCAAAGTGACTATTCAGTTTTCAGGATGATACACTATGAAGATGTTTCAAAAAATC
+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+ 980
TTTTTCGTTATTGGAGTTTCACTGATAAGTCAAAAGTCCTACTATGTGATACTTCTACAAAGTTTTTTAG

 E   K   A   I   T   S   K   .   L   F   S   F   Q   D   D   T   L   .   R   C   F   K   K   S
   K   K   Q   .   P   Q   S   D   Y   S   V   F   R   M   I   H   Y   E   D   V   S   K   N
     K   S   N   N   L   K   V   T   I   Q   F   S   G   .   Y   T   M   K   M   F   Q   K   I

   F   A   I   V   E   F   H   S   N   L   K   .   S   S   V   S   H   L   H   K   L   F   D
 F   F   C   Y   G   .   L   S   .   E   T   K   L   I   I   C   .   S   S   T   E   F   F   R
   F   L   L   L   R   L   T   V   I   .   N   E   P   H   Y   V   I   F   I   N   .   F   I

TGACCAAAACAAACAAACAGAAAACAGAAAACAAAAAAACCTCTATGCAATCTGAGTAGAGCAGCCACAA
+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+ 1050
ACTGGTTTTGTTTGTTTGTCTTTTGTCTTTTGTTTTTTTGGAGATACGTTAGACTCATCTCGTCGGTGTT

   D   Q   N   K   Q   T   E   N   R   K   Q   K   N   L   Y   A   I   .   V   E   Q   P   Q
 L   T   K   T   N   K   Q   K   T   E   N   K   K   T   S   M   Q   S   E   .   S   S   H   N
   .   P   K   Q   T   N   R   K   Q   K   T   K   K   P   L   C   N   L   S   R   A   A   T

   S   W   F   L   C   V   S   F   L   F   C   F   F   R   .   A   I   Q   T   S   C   G   C
   V   L   V   F   L   C   F   V   S   F   L   F   V   E   I   C   D   S   Y   L   L   W   L
 Q   G   F   C   V   F   L   F   C   F   V   F   F   G   R   H   L   R   L   L   A   A   V   V

CCAAAAAATTCTACAACACACACTGTTCTGAAAGTGACTCACTTATCCCAAGAAAATGAAATTGCTGAAA
+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+···+ 1120
GGTTTTTTAAGATGTTGTGTGTGACAAGACTTTCACTGAGTGAATAGGGTTCTTTTACTTTAACGACTTT

   P   K   N   S   T   T   H   T   V   L   K   V   T   H   L   S   Q   E   N   E   I   A   E
     Q   K   I   L   Q   H   T   L   F   .   K   .   L   T   Y   P   K   K   M   K   L   L   K
   T   K   K   F   Y   N   T   H   C   S   E   S   D   S   L   I   P   R   K   .   N   C   .   K

   G   F   F   E   V   V   C   V   T   R   F   T   V   .   K   D   W   S   F   S   I   A   S   L
     W   F   I   R   C   C   V   S   N   Q   F   H   S   V   .   G   L   F   I   F   N   S   F
       L   F   N   .   L   V   C   Q   E   S   L   S   E   S   I   G   L   F   H   F   Q   Q   F
```

```
GATCTTTCAGGACTCTACCTCATATCAGTTTGCTAGCAGAAATCTAGAAGACTGTCAGCTTCCAAACATT
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 1190
CTAGAAAGTCCTGAGATGGAGTATAGTCAAACGATCGTCTTTAGATCTTCTGACAGTCGAAGGTTTGTAA

  R  S  F  R  T  L  P  H  I  S  L  L  A  E  I  .  K  T  V  S  F  Q  T  L
   D  L  S  G  L  Y  L  I  S  V  C  .  Q  K  S  R  R  L  S  A  S  K  H
    I  F  Q  D  S  T  S  Y  Q  F  A  S  R  N  L  E  D  C  Q  L  P  N  I
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
    D  K  L  V  R  G  .  I  L  K  S  A  S  I  .  F  V  T  L  K  W  V  N
  S  R  E  P  S  .  R  M  D  T  Q  .  C  F  D  L  L  S  D  A  E  L  C  .
   I  K  .  S  E  V  E  Y  .  N  A  L  L  F  R  S  S  Q  .  S  G  F  M


AATGCAATGGTTAACATCTTCTGTCTTTATAATCTACTCCTTGTAAAGACTGTAGAAGAAAGCGCAACAA
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 1260
TTACGTTACCAATTGTAGAAGACAGAAATATTAGATGAGGAACATTTCTGACATCTTCTTTCGCGTTGTT

   M  Q  W  L  T  S  S  V  F  I  I  Y  S  L  .  R  L  .  K  K  A  Q  Q
  .  C  N  G  .  H  L  L  S  L  .  S  T  P  C  K  D  C  R  R  K  R  N  N
   N  A  M  V  N  I  F  C  L  Y  N  L  L  L  V  K  T  V  E  E  S  A  T
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   I  C  H  N  V  D  E  T  K  I  I  .  E  K  Y  L  S  Y  F  F  A  C  C
    H  L  P  .  C  R  R  D  K  Y  D  V  G  Q  L  S  Q  L  L  F  R  L  L
  L  A  I  T  L  M  K  Q  R  .  L  R  S  R  T  F  V  T  S  S  L  A  V  I


TCCATCTCTCAAGTAGTGTATCACAGTAGTAGCCTCCAGGTTTCCTTAAGGGACAACATCCTTAAGTCAA
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 1330
AGGTAGAGAGTTCATCACATAGTGTCATCATCGGAGGTCCAAAGGAATTCCCTGTTGTAGGAATTCAGTT

   S  I  S  Q  V  V  Y  H  S  S  S  L  Q  V  S  L  R  D  N  I  L  K  S
    P  S  L  K  .  C  I  T  V  V  A  S  R  F  P  .  G  T  T  S  L  S  Q
  I  H  L  S  S  S  V  S  Q  .  .  P  P  G  F  L  K  G  Q  H  P  .  V  K
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
  D  M  E  .  T  T  Y  .  L  L  L  R  W  T  E  K  L  S  L  M  R  L  D  F
   G  D  R  L  Y  H  I  V  T  T  A  E  L  N  G  .  P  V  V  D  K  L  .
    W  R  E  L  L  T  D  C  Y  Y  G  G  P  K  R  L  P  C  C  G  .  T  L


AAGAGAGAAGAGGCACCACTAAAAGATCGCAGTTTGCCTGGTGCAGTGGCTCACACCTGTAATCCCAACA
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+ 1400
TTCTCTCTTCTCCGTGGTGATTTTCTAGCGTCAAACGGACCACGTCACCGAGTGTGGACATTAGGGTTGT

   K  E  R  R  G  T  T  K  R  S  Q  F  A  W  C  S  G  S  H  L  .  S  Q  H
    K  R  E  E  A  P  L  K  D  R  S  L  P  G  A  V  A  H  T  C  N  P  N
     R  E  K  R  H  H  .  K  I  A  V  C  L  V  Q  W  L  T  P  V  I  P  T
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
    S  L  L  P  V  V  L  L  D  C  N  A  Q  H  L  P  E  C  R  Y  D  W  C
  F  L  S  S  A  G  S  F  S  R  L  K  G  P  A  T  A  .  V  Q  L  G  L  M
   L  S  F  L  C  W  .  F  I  A  T  Q  R  T  C  H  S  V  G  T  I  G  V
```

```
TTTTGGGAACCCAAGGTGGGTAGATCACGAGATCAAGAGATCAAGACCATAGTGACCAACATAGTGAAAC
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  1470
AAAACCCTTGGGTTCCACCCATCTAGTGCTCTAGTTCTCTAGTTCTGGTATCACTGGTTGTATCACTTTG

   F  G  N  P  R  W  V  D  H  E  I  K  R  S  R  P  .  .  P  T  .  .  N
 I  L  G  T  Q  G  G  .  I  T  R  S  R  D  Q  D  H  S  D  Q  H  S  E  T
   F  W  E  P  K  V  G  R  S  R  D  Q  E  I  K  T  I  V  T  N  I  V  K
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   K  P  F  G  L  H  T  S  .  S  I  L  L  D  L  G  Y  H  G  V  Y  H  F
   K  P  V  W  P  P  Y  I  V  L  D  L  S  .  S  W  L  S  W  C  L  S  V
 N  Q  S  G  L  T  P  L  D  R  S  .  S  I  L  V  M  T  V  L  M  T  F  G


CCCATCTCTACTGAAAGTGCAAAAATTAGCTGGGTGTGTTGGCACATGCCTGTAGTCCCAGCTACTTGAG
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  1540
GGGTAGAGATGACTTTCACGTTTTTAATCGACCCACACAACCGTGTACGGACATCAGGGTCGATGAACTC

   P  I  S  T  E  S  A  K  I  S  W  V  C  W  H  M  P  V  V  P  A  T  .
   P  S  L  L  K  V  Q  K  L  A  G  C  V  G  T  C  L  .  S  Q  L  L  E
   P  H  L  Y  .  K  C  K  N  .  L  G  V  L  A  H  A  C  S  P  S  Y  L  R
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   G  M  E  V  S  L  A  F  I  L  Q  T  H  Q  C  M  G  T  T  G  A  V  Q  S
   G  D  R  S  F  T  C  F  N  A  P  H  T  P  V  H  R  Y  D  W  S  S  S
   W  R  .  Q  F  H  L  F  .  S  P  T  N  A  C  A  Q  L  G  L  .  K  L


AGGCTGAGGCAGGAGAATCGTTTGAACCCGGGAGGCAGAGGTTGCAGTGTGGTGAGATCATGCCACTACA
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+  1610
TCCGACTCCGTCCTCTTAGCAAACTTGGGCCCTCCGTCTCCAACGTCACACCACTCTAGTACGGTGATGT

   E  A  E  A  G  E  S  F  E  P  G  R  Q  R  L  Q  C  G  E  I  M  P  L  H
   R  L  R  Q  E  N  R  L  N  P  G  G  R  G  C  S  V  V  R  S  C  H  Y
    G  .  G  R  R  I  V  .  T  R  E  A  E  V  A  V  W  .  D  H  A  T  T
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
   A  S  A  P  S  D  N  S  G  P  L  C  L  N  C  H  P  S  I  M  G  S  C
   L  S  L  C  S  F  R  K  F  G  P  P  L  P  Q  L  T  T  L  D  H  W  .  V
   P  Q  P  L  L  I  T  Q  V  R  S  A  S  T  A  T  H  H  S  .  A  V  V


CTCCAGCCTGGCGACAGAGCGAGACTTGGTTTC
+---+---+---+---+---+---+---+--->  1643
GAGGTCGGACCGCTGTCTCGCTCTGAACCAAAG

   S  S  L  A  T  E  R  D  L  V  S
 T  P  A  W  R  Q  S  E  T  W  F
   L  Q  P  G  D  R  A  R  L  G  F
+---+---+---+---+---+---+---+--->
   E  L  R  A  V  S  R  S  K  T  L
    G  A  Q  R  C  L  S  V  Q  N  A
 S  W  G  P  S  L  A  L  S  P  K
```